

REMARKS

Claims 1-20 are all the claims presently pending in the application. Various claims are amended to clarify the present invention. The amendments introduce no new matter. New claim 20 is added.

Support for the amendment to claims 8 and 17 is found at lines 21-25 of page 21. Support for new claim 20 is found at lines 9-26 of page 11.

It is noted that the claim amendments herein, if any, are made only to more clearly and completely define the invention and to assure grammatical and idiomatic English and improved form under United States practice, and are not made to distinguish the invention over the prior art, or for any statutory requirements of patentability. Further, Applicants specifically state that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Claims 1-19 stand rejected under 35 U.S.C. §102(e) as anticipated by US 6,526,056 to Rekter.

This rejection is again respectfully traversed in the following discussion.

THE CLAIMED INVENTION

The claimed invention, as exemplarily described in the embodiment of independent claim 1, relates to a node in an Ethernet network to relay an Ethernet frame.

The node has an element which inserts two or more VLAN tags into the Ethernet frame. The element also removes an inserted VLAN tag from the Ethernet frame. The VLAN tags are inserted to and removed from the Ethernet frame during a frame relay process.

A conventional node in Ethernet is controlled with a network control frame storing the network control information in the payload section and the address of the node to be controlled in the MAC address and the IP address. If a user uses the entire network bandwidth for data transmission, then the node cannot send the control frame. In addition, the control frame needs to have at least 64 bytes regardless of the control information amount for the node according to Ethernet standard specified by IEEE802.3.

IEEE802.1Q, that provides for the technology related to the VLAN, specifies that a VLAN tag shall be given to a frame during frame relay for network separation. The node that relays conventional Ethernet frames has a function to process at most one VLAN tag at a time in frame relay and a forwarding table to store the VLAN tag information given during such frame relay assures an information area for one VLAN tag only.

Because the VLAN tag in the frame is the information for network separation, the node that relays the frame with VLAN tag does not change the contents of the VLAN tag. The information in the VLAN tag is used for frame transfer only. Further, in transmission of the VLAN frame at the data link layer, the frame is relayed and the transfer port is determined by reference to the MAC address and the VLAN ID.

The conventional node control in Ethernet as described above has several drawbacks. A conventional node in Ethernet as specified in IEEE802.3 is controlled using the frame storing the control information in the payload section and the address of the node to be controlled in the MAC address and the IP address. Thus, while the user uses the entire network bandwidth for data transmission, the node cannot send the control frame. The control frame needs to have at least 64 bytes regardless of the control information amount for the node according to Ethernet standard. If the control frame is frequently sent in the

network, it may oppress the bandwidth of the user data. When the VLAN tag is given for frame transfer, several VLAN tags cannot be provided because there is no information area in the forwarding table. And, a loop network may be formed in IEEE802.3 Ethernet, because no function to discard frames when a loop of packet transfer is generated in VLAN packet transfer at the data link layer has been realized, the looped packets occupy the network or induce oppression of the packet memory in the system, which results in unstable status of the network.

The claimed invention, on the other hand, provides a frame transfer method and a node in Ethernet that enable transmission of the network control information from the node even while the user is using the network. The frame transfer method and node in Ethernet can minimize oppression of the network bandwidth caused by transmission of the network control information by enabling transmission of the minimum information regardless of the frame restriction. The frame transfer method and node in Ethernet can send a large information amount including the network control information as tags by enabling provision of several tags in Ethernet frame transfer. The frame transfer method and node in Ethernet enable discarding of frames in VLAN packet transfer at the data link layer and to thereby prevent the network from becoming unstable by avoiding occupation of the network by looped packets and oppression of the packet memory in the system.

THE PRIOR ART REJECTION

Claims 1-19 stand rejected under 35 U.S.C. §102(e) as anticipated by Rekter. However, Applicants submit that there are features of the claimed invention which are neither disclosed nor suggested in Rekter.

With regard to independent claim 1, Rekter fails to disclose or suggest at least "... an element which inserts two or more VLAN tags into said frame and removes an other said inserted VLAN tag in a relay process of said frame."

The Examiner points to column 4, lines 64-66, as demonstrating insertion of two tags and to column 8, lines 41-54, as demonstrating removal of a tag.

However, the insertion of two tags and removal of a tag in Rekter is not being executed by the same unit, as clearly explained at lines 31-46 of column 8: "*We now return to FIG.1 and assume that PE2 has just sent P2 a packet thus tagged.... When P2 forwards the packet to P1, it replaces tag T2 with a new tag, T1, which P1 has asked its neighbors to attach to any packets that should be sent through PE1-egress routes, and P1 similarly makes its routing decision without having had to maintain separate routing information for the destination VPN.*"

In lines 51-52 of column 8, Rekter further describes: "*So PE1 forwards the packet to CE1 after removing tag T3.*" Thus, again there is no suggestion in the description in column 8 of Rekter that two tags are inserted and one tag removed by the same unit.

Thus, Rekter fails to teach or suggest an element that both removes a tag and replaces it with two or more tags, as required by independent claim 1. In order to satisfy the plain meaning of the claim language of independent claim 1, the PE2 unit in the above-recited description from Rekter would have to also remove a tag. There is no suggestion in Rekter for this additional step of removing a tag in PE2.

Relative to the rejection for claims 4, 5, and 14, there is no suggestion in lines 5-6 of column 9 that information from two or more VLAN tags are used for the forwarding table search.

Moreover, relative to claims 8 and 17, Applicants respectfully submit that the description at line 49 of column 7 through line 15 of column 8 does not reasonably describe control information being stored in a tag that is inserted, since the description in these lines describe generic Ethernet control information. As explained above, this feature of the present invention allows control information to be sent along with packets having payload information. Figure 17 of the present application shows this aspect of the claimed invention.

Claims 11-19 recite similar features to claims 1-10, and stand rejected on substantially similar basis, and Applicants again traverse the rejection of claims 11-19 on substantially similar grounds as discussed above.

Thus, Applicant respectfully requests the Examiner reconsider and withdraw the rejection of claims 1-19.

CONCLUSION AND FORMAL MATTERS

In view of the foregoing, Applicant submits that claims 1-19, all the claims presently pending in the application, are patentably distinct over the prior art of record and are allowable, and that the application is in condition for allowance. Such action would be appreciated.

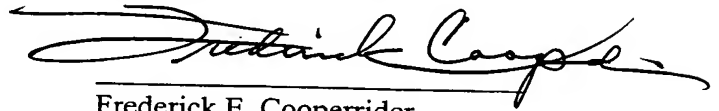
Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned attorney at the local telephone number listed below to discuss any other changes deemed necessary for allowance in a telephonic or personal interview.

Application No. 10/642,197
Attorney Docket: MA-581-US (MAT.023)

To the extent necessary, Applicant petitions for an extension of time under 37 CFR §1.136. The Commissioner is authorized to charge any deficiency in fees, including extension of time fees, or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

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Respectfully Submitted,



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